

their places of maximum and minimum action accord with the effects of induced currents. *Time* has great effect over results produced by currents induced in the mass, and none over those due to polarity. By this test the effects of the diamagnetic metals are found due to induced currents.

The phenomena produced by the use of the present apparatus are then shown to be in close and direct relation to the phenomena of revulsion formerly described by the author: the parallel is closely carried out and extended, and both sets of effects referred to one and the same cause.

The author endeavours to repeat an experiment described by Reich, but without success; and he finds that even when iron is used no arrangement of magnets can produce any test of polarity at all comparable to the use of an astatic needle or to suspension between the poles of a powerful magnet, and thinks that arrangements which are thus less sensible with iron are not likely to be more sensible with diamagnetic metals, even if they are polar.

Finally, the author does not consider that the idea of diamagnetic polarity has gained as yet any additional proof beyond the fact that diamagnetic bodies, such as bismuth and phosphorus, are repelled by one or both magnetic poles; he does not reject the idea of polarity, but his opinion or judgment remains the same as at the time of its announcement in 1845.

A paper was also read, entitled "Contributions to the Chemistry of the Urine.—Paper IV. On so-called Chylous Urine." By H. Bence Jones, M.D., A.M., F.R.S. &c.

The definition given of chylous urine is, that it is urine which is white from the suspension of fatty matter in it. An opportunity of observing a case of this disease having occurred to the author, he was led to make the experiments described in this paper. A harness-maker, age 32, half-caste, who had lived in London for twelve years, had been passing such water for nine months. On examination of the water made at 2 P.M. it solidified, looking like blanc-mange in ten minutes. It was very feebly acid, contained fibrin, albumen, blood-globules and fat; specific gravity=1015. 1000 grs. of this urine gave—

44·42 grs. total solid residue.  
 8·01 grs. total ash.  
 14·03 grs. albumen.  
 8·37 grs. fat.  
 13·26 grs. urea and extractive matter.  
 ·75 gr. loss.  
 955·58 grs. water.

In order to watch the variations produced by food and exercise in the appearance of the urine, every time the urine was made, for five days and nights it was passed into bottles marked with the hour. From these observations, and more particularly from the third, fourth, and sixth days, it was evident that the fibrin and albumen appear in the urine when no fat is there, and that the albuminous urine occurs

before food has been taken, and disappears during the night with perfect rest. Thus the fourth day, at 7<sup>h</sup> 15<sup>m</sup> A.M., on first getting up the urine contained the slightest trace of albumen. The specific gravity=1027; the precipitate by alcohol=0·8 gr. per 1000 grs. urine.

At 9<sup>h</sup> 50<sup>m</sup> A.M., just *before* breakfast, the urine formed a solid coagulum free from fatty matter, but contained a visible deposit of blood. Specific gravity=1015·6; the precipitate by alcohol=14·1 grs. per 1000 grs. of urine.

At 11 A.M., the urine was chylous or white from fatty matter.

Further experiments on the influence of rest and motion in lessening or increasing the albumen in the urine previous to food are then given.

On five different mornings, by rising early or late, and by collecting the precipitate from the urine by alcohol, the influence of rest and motion was determined. The author states that he could fix beforehand whether the urine should be albuminous or not, by directing the patient to get up, or to lie still.

The patient was bled and the serum was opalescent, but did not clear with æther: the blood contained no excess of fat. 1000 parts of blood gave—

2·63 grs. fibrin.  
159·3 grs. blood-globules.  
78·1 grs. solids of serum.  
240·03 grs. total residue.  
759·97 grs. water.

The urine made the same day was examined at different hours; that made immediately before the bleeding was quite white, and that made an hour and a half afterwards was very milky also. Specific gravity=1018. 1000 grs. of urine gave—

56·87 grs. total residue.  
10·80 grs. total ash.  
13·95 grs. albumen.  
7·46 grs. fat.  
24·06 grs. urea, &c.  
·60 gr. loss.  
943·13 grs. water.

The conclusions from these experiments are,—

1. That so-called chylous urine, besides fat, may contain albumen, fibrin, and healthy blood-globules.

2. That, although the fat passes off in the urine after food is taken, yet the albumen, fibrin and blood-globules are thrown out before any food has been taken. During perfect rest the albumen ceases to be excreted; and it does not appear in quantity in the urine even after food is taken, provided there is perfect rest. A short time after rising early the urine may coagulate spontaneously, although no fat is present; and this may happen previous to food, when the urine is free from fat.

3. Though the urine made just before and a short time after bleeding was as milky as it usually was at that hour of the day, yet

the serum of the blood was not milky: it did not contain a larger quantity of fat than healthy blood does.

The general results are,—

1. That the most important changes in the urine in this disease take place independently of the influence of digestion.

2. That the urine in one respect only resembles chyle, and that is in containing, after digestion, a large quantity of fat in a very fine state of division. The supposition that the disease consists in an accumulation of fat in the blood, which is thrown out by the kidneys, carrying with it albumen, fibrin, blood-globules and salts, is altogether disproved, both by actual analyses of the blood, and by the frequent occurrence of a jelly-like coagulum in the urine when no white fatty matter can be seen to be present.

3. The disease consists in some change in the kidney by which fibrin, albumen, blood-globules and salts are allowed to pass out, whenever the circulation through the kidney is increased; and if at the same time fat is present in the blood, it escapes also into the urine. That this change of structure is not visible to the naked eye on post-mortem examination, Dr. Prout long since demonstrated; and in a case of this disease which was in St. George's Hospital, and was examined at Plymouth, no disease of the kidney was observed. From the total absence of fibrinous casts of the tubes from the urine, it is not improbable that by the microscope a difference may be detected in the structure of the mammary processes, rather than in that of the cortical part of the kidneys.

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March 21, 1850.

RICHARD OWEN, Esq., Vice-President, in the Chair.

The following letter from Mr. Addington to the Secretary was read.

Foreign Office, March 20th, 1850.

SIR,—I am directed by Viscount Palmerston to send to you, for the information of the President and Council of the Royal Society, an extract of a letter which his Lordship has received from Mr. James Richardson, stating that in the month of November last, a fall of aërolites had taken place on the coast of Barbary attended with a brilliant stream of light, which extended from Tunis to Tripoli, some of the stones falling in the latter city.

I am, Sir,

Your most obedient, humble Servant,

H. W. ADDINGTON.

*The Secretary to the Royal Society.*

*"Extract of a letter from Mr. Richardson, dated off Jerbah,  
25th January 1850.*

"I will trouble your Lordship by the mention of the astronomic